

Appl. No. 09/667,596
2658-0190P
Page 2

a contact hole 44 to the pixel electrode 28 at a drain electrode part 42A. Accordingly, the contact hole for connecting the pixel electrode 28 to storage electrode part 42B is eliminated to reduce an amount of overlap between the storage electrode part 42B and the pixel electrode 28. Note also in Fig. 3 that pixel electrode 28 overlaps gate line 24, the edge of pixel electrode 28 designated by reference 28A, and contrast FIG. 2 in which pixel edge 28A overlaps the gate line more than in Fig. 3. The contact hole for connecting the pixel electrode 28 to storage electrode part 42B is eliminated in Fig. 3. --

IN THE CLAIMS

Please amend the claims as follows:

1. (Twice Amended) A liquid crystal device having a thin film transistor, comprising:

a plurality of gate lines formed on a substrate;

a plurality of data lines insulated from and intersecting said gate lines, said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,

a pixel electrode,

a thin film transistor connected to one of the data lines and one of the gate lines defining the cell,

a storage capacitor, and

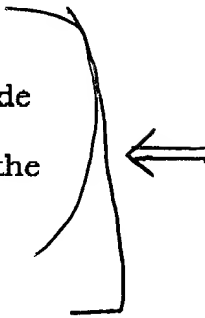
Appl. No. 09/667,596

2658-0190P

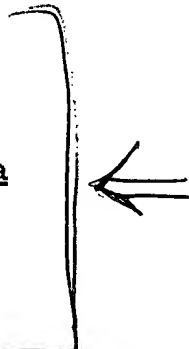
Page 3

a metallic pattern forming a drain electrode of the thin film transistor and a storage electrode of the storage capacitor at the same node, and being electrically connected to the pixel electrode.

9. (Twice Amended) The liquid crystal device of claim 8, wherein the drain electrode part has a [smaller] greater area than [if the] a drain electrode part [was] electrically connected to the pixel electrode via a contact hole in the protective layer over the drain electrode part.



18. (Twice Amended) The liquid crystal device of claim 17, wherein the pixel electrode overlaps a gate line, defining the cell but not connected to the thin film transistor, the overlap of the gate line being less than an overlap in a case wherein [if] the protective layer [included] includes a contact hole over a storage electrode part of the metallic pattern.



21. (Twice Amended) A liquid crystal device having a thin film transistor, comprising:

a plurality of gate lines formed on a substrate;

a plurality of data lines insulated from and intersecting said gate lines, said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,

Appl. No. 09/667,596

2658-0190P

Page 4

a pixel electrode,

a thin film transistor, interposed between one of the data lines and the pixel electrode and including a source electrode connected to the one of the data lines, a gate electrode connected to one of the gate lines a drain electrode, and

a storage capacitor having a storage electrode and a drain electrode at the same node, the storage capacitor being connected to the pixel electrode.

23. (Twice amended) A method of manufacturing a thin film transistor substrate, comprising:

forming a gate line having a gate electrode on a transparent substrate;

forming a gate insulating layer on the gate electrode;

forming a semiconductor layer on the gate insulating layer;

forming a data line having a source electrode, and a metallic pattern having a drain electrode part and a storage electrode part at the same node;

forming a semiconductor layer over at least a portion of one of the gate electrodes, at least a portion of one of the source electrode, and at least a portion of the drain electrode part;

forming a protective film over the entire surface; and

forming a pixel electrode over the protective film.

Appl. No. 09/667,596
2658-0190P
Page 5

Please add new claims as follows:

32. (New) A liquid crystal device having a thin film transistor, comprising:
a plurality of gate lines formed on a substrate;

a plurality of data lines insulated from and intersecting said gate lines,
said data lines and intersecting gate lines defining a plurality of cells, at least
one cell including,

a pixel electrode,

a thin film transistor connected to one of the data lines and one of
the gate lines defining the cell,

a storage capacitor,

a metallic pattern having a drain electrode of the thin film
transistor and a storage electrode of the storage capacitor, and being
electrically connected to the pixel electrode, wherein the metallic pattern is
spaced a predetermined distance from the data line connected to the thin film
transistor, and

a protective layer disposed between the pixel electrode and the
metallic pattern, wherein a portion of a periphery of the pixel electrode overlaps
the metallic pattern.

33. (New) A liquid crystal device having a thin film transistor, comprising:
a plurality of gate lines formed on a substrate;

Appl. No. 09/667,596

2658-0190P

Page 6

a plurality of data lines insulated from and intersecting said gate lines, said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,

a pixel electrode,

a thin film transistor connected to one of the data lines and one of the gate lines defining the cell,

a storage capacitor,

a metallic pattern having a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode, and a protective layer disposed between the pixel electrode and the metallic pattern, wherein a portion of a periphery of the pixel electrode overlaps the metallic pattern, and the metallic pattern is spaced a predetermined distance from the data line connected to the thin film transistor.

34. (New) A liquid crystal device having a thin film transistor, comprising:

a plurality of gate lines formed on a substrate;

a plurality of data lines insulated from and intersecting said gate lines, said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,

a pixel electrode,

Appl. No. 09/667,596

2658-0190P

Page 7

a thin film transistor connected to one of the data lines and one of the gate lines defining the cell,
a storage capacitor,
a metallic pattern having a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode, wherein the metallic pattern has an annular shape and an entire periphery of the pixel electrode overlaps the metallic pattern, and the metallic pattern is spaced a predetermined distance from the data line connected to the thin film transistor.

35. (New) A liquid crystal device having a thin film transistor, comprising:
a plurality of gate lines formed on a substrate;
a plurality of data lines insulated from and intersecting said gate lines, said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,
a pixel electrode,
a thin film transistor connected to one of the data lines and one of the gate lines defining the cell,
a storage capacitor,

Appl. No. 09/667,596

2658-0190P

Page 8

a metallic pattern having a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode,

a protective layer disposed between the pixel electrode and the metallic pattern, wherein the pixel electrode is connected to a storage electrode part of the metallic pattern via a first contact hole in the protective layer and the protective layer does not include a contact hole over a drain electrode part of the metallic pattern, the metallic pattern is spaced a predetermined distance from the data line connected to the thin film transistor, and a portion of a periphery of the pixel electrode overlaps the metallic pattern.

36. (New) A liquid crystal device having a thin film transistor, comprising:

a plurality of gate lines formed on a substrate;

a plurality of data lines insulated from and intersecting said gate lines, said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,

a pixel electrode,

a thin film transistor connected to one of the data lines and one of the gate lines defining the cell,

a storage capacitor,

Appl. No. 09/667,596

2658-0190P

Page 9

a metallic pattern having a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode,

a protective layer disposed between the pixel electrode and the metallic pattern, wherein the pixel electrode is connected to a storage electrode part of the metallic pattern via a first contact hole in the protective layer and the protective layer does not include a contact hole over a drain electrode part of the metallic pattern, the metallic pattern has an annular shape and is spaced a predetermined distance from the data line connected to the thin film transistor, and an entire periphery of the pixel electrode overlaps the metallic pattern.

37. (New) The liquid crystal device of claim 35, wherein the drain electrode part has a greater area than a drain electrode part electrically connected to the pixel electrode via a contact hole in the protective layer over the drain electrode part.

38. (New) The liquid crystal device of claim 35, wherein the pixel electrode has a larger aspect ratio than if the drain electrode part was electrically connected to the pixel electrode via a contact hole in the protective layer over the drain electrode part.

Appl. No. 09/667,596
2658-0190P
Page 10

39. (New) The liquid crystal device of claim 36, wherein the drain electrode part has a greater area than a drain electrode part electrically connected to the pixel electrode via a contact hole in the protective layer over the drain electrode part.

40. (New) The liquid crystal device of claim 36, wherein the pixel electrode has a larger aspect ratio than if the drain electrode part was electrically connected to the pixel electrode via a contact hole in the protective layer over the drain electrode part.

41. (New) A liquid crystal device having a thin film transistor, comprising:
a plurality of gate lines formed on a substrate;
a plurality of data lines insulated from and intersecting said gate lines,
said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,
a pixel electrode,
a thin film transistor connected to one of the data lines and one of the gate lines defining the cell,
a storage capacitor,

Appl. No. 09/667,596

2658-0190P

Page 11

a metallic pattern having a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode,

a protective layer disposed between the pixel electrode and the metallic pattern, wherein the pixel electrode is connected to a storage electrode part of the metallic pattern via a first contact hole in the protective layer and connected to a drain electrode part of the metallic pattern via a second contact hole in the protective layer, the metallic pattern is spaced a predetermined distance from the data line connected to the thin film transistor, and a portion of a periphery of the pixel electrode overlaps the metallic pattern.

42. (New) A liquid crystal device having a thin film transistor, comprising:

a plurality of gate lines formed on a substrate;

a plurality of data lines insulated from and intersecting said gate lines,

said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,

a pixel electrode,

a thin film transistor connected to one of the data lines and one of the gate lines defining the cell,

a storage capacitor,

Appl. No. 09/667,596
2658-0190P
Page 12

a metallic pattern having a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode,

a protective layer disposed between the pixel electrode and the metallic pattern, wherein the pixel electrode is connected to a storage electrode part of the metallic pattern via a first contact hole in the protective layer and connected to a drain electrode part of the metallic pattern via a second contact hole in the protective layer, the metallic pattern has an annular shape and is spaced a predetermined distance from the data line connected to the thin film transistor and an entire periphery of the pixel electrode overlaps the metallic pattern.

43. (New) A liquid crystal device having a thin film transistor, comprising:
a plurality of gate lines formed on a substrate;

a plurality of data lines insulated from and intersecting said gate lines,
said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,

a pixel electrode,

a thin film transistor connected to one of the data lines and one of the gate lines defining the cell,

a storage capacitor,

Appl. No. 09/667,596
2658-0190P
Page 13

a metallic pattern having a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode, and

a protective layer disposed between the pixel electrode and the metallic pattern, wherein the pixel electrode is connected to a drain electrode part of the metallic pattern via a contact hole in the protective layer, the metallic pattern has an annular shape and is spaced a predetermined distance from the data line connected to the thin film transistor, and an entire periphery of the pixel electrode overlaps the metallic pattern.

44. (New) A liquid crystal device having a thin film transistor, comprising:
a plurality of gate lines formed on a substrate;
a plurality of data lines insulated from and intersecting said gate lines,
said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,

a pixel electrode,
a thin film transistor connected to one of the data lines and one of the gate lines defining the cell,
a storage capacitor,

Appl. No. 09/667,596

2658-0190P

Page 14

a metallic pattern having a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode, and

a protective layer disposed between the pixel electrode and the metallic pattern, wherein the pixel electrode is connected to a drain electrode part of the metallic pattern via a contact hole in the protective layer, the protective layer does not include a contact hole over a storage electrode part of the metallic pattern, the pixel electrode overlaps a gate line, defining the cell but not connected to the thin film transistor, the overlap of the gate line being less than an overlap in a case wherein the protective layer includes a contact hole over a storage electrode part of the metallic pattern, the metallic pattern is spaced a predetermined distance from the data line connected to the thin film transistor, and a portion of a periphery of the pixel electrode overlaps the metallic pattern.

45. (New) A method of manufacturing a thin film transistor substrate, comprising:

- forming a gate line having a gate electrode on a transparent substrate;
- forming a gate insulating layer on the gate electrode;
- forming a semiconductor layer on the gate insulating layer;

Appl. No. 09/667,596
2658-0190P
Page 15

forming a data line having a source electrode, and a metallic pattern having a drain electrode part and a storage electrode part;

forming a semiconductor layer over at least a portion of one of the gate electrodes, at least a portion of one of the source electrode, and at least a portion of the drain electrode part;

forming a protective film over the entire surface; and

forming a pixel electrode over the protective film such that a portion of a periphery of the pixel electrode overlaps the metallic pattern.

46. (New) A method of manufacturing a thin film transistor substrate, comprising:

forming a gate line having a gate electrode on a transparent substrate;

forming a gate insulating layer on the gate electrode;

forming a semiconductor layer on the gate insulating layer;

forming a data line having a source electrode, and a metallic pattern having a drain electrode part and a storage electrode part;

forming a semiconductor layer over at least a portion of one of the gate electrodes, at least a portion of one of the source electrode, and at least a portion of the drain electrode part;

forming a protective film over the entire surface; and

Appl. No. 09/667,596

2658-0190P

Page 16

forming a pixel electrode over the protective film such that an entire periphery of the pixel electrode overlaps the metallic pattern.